CENTRAL INTELLIGENCE AGENCY
WASHINGTON, D.C. 20505

14 May 1970

MEMORANDUM FOR: COINS Project Manager

SUBJECT : COINS Contingency Planning

REFERENCE : COINS/174-70, 17 April 1970, same subject

1. CIA made no provision in its budget for a share in the funding of the COINS switch in FY 1971. In the current tight budget situation, CIA has insufficient justification to divert from other programs [redacted] you say is CIA's share of the switch costs.

25X1

2. When CIA was planning its FY 1971 budget, it was assumed that the COINS experiment would be in the evaluation phase during early FY 1971 and that CIA would continue to provide the switch during this period as a service of common concern. It was also assumed that if the decision were made to develop an operational COINS system that that system would not require a store and forward switch. I am sending you a separate memorandum which recommends consideration of an alternative switchless system.

3. The Bureau of the Budget (BOB) is aware of the COINS experiment and of the interest of the President's Foreign Intelligence Advisory Board and of the Intelligence Community in testing the COINS concept. If CIA is unable to make funds available from its FY 1971 budget, it would seem reasonable that NSA, as the Executive Agent for COINS, seek supplemental funds from BOB for this purpose. The funding of the switch strikes us as best provided by one Agency rather than through prorating and transferring of funds from several.

SUBJECT: COINS Contingency Planning

Meanwhile, I suggest that we in COINS give early consideration to arrangements which do not require the switch.

4. As a separate and added thought, I believe your memo (COINS/174-70) of 17 April is somewhat overstated. The DCI approved extension of the COINS concept for budgeting and programming purposes, but the intention is to examine alternatives before settling on the nature of an operational information exchange system for the Community. It is in keeping with this spirit that we think an alternative to the switch should be considered.

[redacted] 25X1

CIA COINS Subsystem Manager

COINS

CONTRACTOR WORK STATEMENT

I. TASKS

1. The contractor will continue to conduct an independent, detailed review of the computer and communications interfaces of an existing experimental network of information retrieval computer systems. Specific attention will be given to the hardware, software and communications facilities involved in the interface. The study will not include any consideration or aspect of data base management systems or files. The review should result in specific recommendations for network improvement which could be reflected in the experimental network. Major changes in the current network configuration known to be taking place in the immediate future and which should be considered in the study are (a) the replacement of an IBM 360/50 computer subsystem with a GE 635 subsystem, (b) replacement of a UNIVAC 490 subsystem with a UNIVAC 494 subsystem and (c) replacement of the IBM 360/67 with another IBM 360 system. The IBM 360/30 which is currently serving as the switch for the network may be replaced. The study shall encompass the following areas:

a. Logic procedures, message types and formats, and operations of the network "store and forward" switch (i.e., IBM 360/30) including switch software, queues and logs of network activity.

b. Hardware and software interface to the network switch at each of the four participating agencies having a computer system operating in the network, with specific attention being given to buffers and queues.

c. Quality and reliability of the network communications facilities.

d. Adequacy of the existing component system and network switch logs to provide both information required for system management and information to provide a continuing and meaningful evaluation of network operations and reliability.

2. Prepare a series of statistical studies on a specified six-week period of operations using data currently being collected. The results of these studies are to be used by the contractor to answer the following questions:

a. What is the average response time per inter-agency interrogation by system? Is there any relationship between the response time and the hour of the day?

b. What is the average response time per inter-agency interrogations by file? Is there any significant relationship between the response time and (1) how a file is structured or organized and (2) the size of a file?

c. What is the average length of answers to inter-agency interrogations (i.e., number of segments)? Is there any relationship between the file interrogated and the length of answers?

d. What is the average length of all other types of messages (e.g., interrogations)?

e. What are the average number of pad characters added to each type of message to meet the present fixed packet length (i.e., 156 characters)? What percentage of the total characters transmitted are pad characters? In what type of messages are pad characters most prevalent? Sampling would be sufficient.

f. What are the causes for interrogations not being answered during a given six week period? For the ten most frequent causes identified the contractor will:

(1) Indicate number of unanswered interrogations.

(2) Provide a recommendation on how to overcome the identified deficiency.

g. What is the rate of transmission error for each of the data links in the network and does the error rate vary by hour? What are the principle causes for these transmission errors? How could this error rate be reduced?

h. What is the mean-time-between-failure (MTBF) and the mean-time-to-repair (MTTR) for each data link, communication equipment (e.g., MODEM), crypto equipment and computer systems, including communications and the switch in the network? For each of the six most frequent causes of failure the contractor will:

(1) Indicate the number of failures and average time to repair.

(2) Provide recommendations to eliminate or minimize such failures in the future.

i. What is the present utilization of each data link per operating hour? (i.e., number of characters transmitted vs. maximum number of characters possible).

3. Complete a study already in progress within COINS Management Office of various alternative communication configurations possible in the present COINS Experiment including the impact of interfacing COINS to the DIA/IDHS network. The government will provide cost figures wherever possible including all preliminary information which it has collected to date on some alternative configurations. The NSA/TI TETRAHEDRON, DOD/ARPA IMP's and a digital version of the Bellfield System will be included as alternatives.

a. First, for each alternative configuration considered the contractor will provide:

(1) Communications net diagram identifying major components.

(2) Detail narrative description of each alternative.

(3) Summary chart of advantages and disadvantages.

(4) Breakdown of the total dollar costs and man-months of effort required for each agency to implement including operating costs.

(5) Possible conversion schedule and cost for each organization to convert from the present configurations to each of the proposed alternative.

(a) Dollar costs or savings for conversion (based on a projected five-year span).

(b) Man-months of effort required to convert.

(c) Milestone chart of major actions that would need to be undertaken by each organization

(d) Additional hardware and software required.

(e) Changes required in the present operating procedures.

(f) Message/segment accounting within each alternative.

(g) Cost analysis considerations for each alternative.

(h) Discussion of the conversational mode capability.

(i) Recommendations concerning forword error defection and correction for each alternative.

(6) The hardware and software interface requirements and specifications for each of the configurations considered.

b. Second, the contractor will prepare comparative analysis of all alternative configurations considered in 3a. above.

c. Third, the contractor will identify the alternative configuration which he recommends and he will setforth his reasons for the selection.

4. The contractor will conduct two controlled tests of the COINS Experiment; one in April 1970 and one in July 1970. In each test the contractor will submit a minimum of ten interrogations from a remote terminal at each node in the network for each system in the network. At the conclusion of each test the contractor will prepare a separate report on the results. At a minimum these reports will contain:

a. A table charting the flow of each interrogation throughout the network identifying:

(1) All related activity generated by each interrogation (e.g., receipts, answers, aborts, etc.).

(2) Response times.

(3) Causes for delays, no replies, aborts, etc.

(4) Problem areas where these control interrogations are lost or delayed.

b. Set of recommendations based on the results of these tests to improve reliability and response time.

II. FACILITIES & INFORMATION TO BE PROVIDED BY THE GOVERNMENT:

The government organizations indicated will provide the contractor with the necessary information to complete these studies.

1. Project Manager will provide information collected to date on the present configuration as well as some alternative configurations.

2. NSA/T1 has agreed to provide a description of TETRAHEDRON and related cost figures including a Milestone chart of a possible implementation schedule.

3. NSA/R1 has agreed to provide a conceptual description of a digital Bellfield system including estimates of costs and times that could be expected to implement such a system.

4. DIA has agreed to provide the information required to determine the impact of IDHS on the switch.

5. All participants have agreed to provide the contractor with the necessary information to complete this study, for example:

(a) Cost figures

(b) Estimates of man-months of efforts required.

(c) Identification of advantages and disadvantages for each alternative

(d) Identification of hardware and software required.

(e) Estimate on the volume of traffic to be handled.

(f) Permit contractor to submit interrogations for the controlled tests.

6. All available statistics on the current operations including those collected and published by Informatics Inc. should be used in support of the study of alternative configurations.

III. DELIVERABLE ITEMS:

Six end-items to be delivered by the contractor on the dates indicated:

1. May 15, 1970 - Report on the results of the first controlled test of the network.

(See Page 6)

2. July 15, 1970 - Draft report on alternative network configurations (See Task 3).

3. July 17, 1970 - (a) Statistical report on the results of Task 2.

(b) Supplemental recommendations as a result of Task 1.

4. August 15, 1970 - (a) Report on the results of the second controlled test of the network conducted in July 1970 (See Task 4).

(b) Final report on alternative network configurations (See Task 3).